

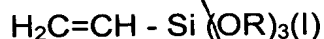
CLAIMS:

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1. Fluid silico-acrylic compositions, stable in the long term, polymerizable thermally and by radiation, by mechanism giving rise to free radicals, with a very low water (below 1%) and volatile solvent content, containing silica, a silane and a multifunctional acrylic monomer, characterised by the fact that the silica is in the form of individualised particles with an average diameter in the range 9 to 100 nm, not interconnected by siloxane bonds, and the silane is a vinyl silane of the formula (I)

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in which R represents a methyl or ethyl radical, and the multifunctional (meth)acrylic monomer is an alkoxyated (meth)acrylate.

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2. Compositions according to claim 1, characterised in that they contain 5 to 60 wt.% silica.

3. Compositions according to claim 2, characterised in that they contain 30 to 50 wt.% silica.

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4. Compositions according to claim 1, characterised in that they contain silica in the form of individualised particles, not interconnected by siloxane bonds, with an average diameter in the range 12 to 50 nm.

5. Compositions according to claim 1, characterised by the fact that the quantity of vinyl silane of formula (I) is within the range 0.01 g to 1 g per gram initial dry silica.

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6. Compositions according to claim 1, characterised by the fact that the quantity of vinyl silane of formula (I) is within the range 0.05 g to 0.7 g per gram initial dry silica.

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7. Compositions according to claim 1, characterised by the fact that the multifunctional (meth)acrylic monomer of the alkoxyated (meth)acrylate type is of the ethoxylated or propoxylated di(meth)acrylate type.

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8. Compositions according to claim 1, characterised by the fact that the multifunctional (meth)acrylic monomer of the alkoxyated (meth)acrylate type is of the ethoxyated or propoxyated tri(meth)acrylate type.

5 9. Compositions according to claim 8, characterised in that the ethoxyated triacrylate monomer is the ethoxyated trimethylolpropane triacrylate.

10. Compositions according to claim 8, characterised in that the ethoxyated triacrylate monomer is the ethoxyated pentaerythritol triacrylate.

10 11. Compositions according to claim 1, characterised by the fact that the multifunctional (meth)acrylic monomer of the alkoxyated (meth)acrylate type is of the ethoxyated or propoxyated tetra (meth)acrylate.

15 12. Method for preparation of a composition as defined in claim 1, characterised in that an aqueous silica sol containing the desired quantity and grade of silica, the chosen quantity of vinyl silane of formula (I), the desired quantity of multifunctional (meth)acrylic monomer of the alkoxyated (meth)acrylate type, and isopropyl alcohol are mixed at ambient temperature, under agitation, then this mixture is subjected to distillation under reduced pressure and under agitation, at a temperature below 50°C until the water and volatile solvents are eliminated.

20 13. Method according to claim 12, characterised in that the initial aqueous silica sol is an acid sol.

14. Method according to claim 13, characterised in that the initial silica sol has a pH between 1 and 3.

25 15. Use of a composition as defined in claim 1 to develop protective transparent and uncoloured coatings against abrasion, obtained by polymerization giving rise to free radicals, by radiation (UV, electron bundles) or thermally.

16. Use of a composition as defined in claim 1 to develop anti-scratch, transparent and uncoloured varnishes, obtained by polymerization giving rise to free radicals, by radiation (UV, electron bundles) or thermally.

Add A2